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| APPLICATION NUMBER | FILING DATE | FIRST NAMED APPLICANT | ATTORNEY DOCKET NO. |
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| 08/485,163 | 06/07/95 | BEAUDRY | G 37690-II-1-P |

18N2/1113

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| EXAMINER | |
|---|---|
| BROWN, K | |
| ART UNIT | PAPER NUMBER |
| 1812 | 16 |

DATE MAILED: 11/13/96

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

## OFFICE ACTION SUMMARY

☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

☒ Claim(s) 30-35 & 43 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 30-35 & 43 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

**Application Papers**

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

☒ Notice of Reference Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

☒ Notice to Comply with Sequence Rules

– SEE OFFICE ACTION ON THE FOLLOWING PAGES –



★ U.S. GPO: 1996-410-238/40050

## DETAILED ACTION

1. Claims 38-42 have been canceled. Although it is noted that Applicant believes that only claims 30-35 are pending (see page 2, first paragraph, of Paper No. 13); claim 43 has not been canceled and is examined in this application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Sequence Rules - 37 C.F.R. 1.821-1.825***

3. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and / or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And / Or Amino Acid Sequence Disclosures.

The specification contains oligonucleotide sequences at least at pages 32, 41, and 43, and Figures 1B and 3-5 include nucleotide and/or amino acid sequences which must have sequence identifiers listed in a Sequence Listing.

***Drawings***

4. Each page of Figures 3-5 must have a separate part number (e.g. 3A, 3B, 3C, etc), and the Brief Description of the Drawings must be amended to recite the different part numbers of the drawings.

*Specification*

5. The disclosure is objected to because of the following informalities: On page 19, at lines 2-9, the specification states that expression vector CD4-IgG2-pcDNA1 is deposited under ATCC Accession No. 40952, while at line 14, the specification states that the same expression vector is deposited under ATCC Accession No. 40951.

Appropriate clarification and correction is required.

***Claim Rejections - 35 USC § 112***

6. Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 43 is dependent upon a canceled claim. For purposes of examination, the claim will be interpreted as a detectably labeled CD4-IgG heterotetramer, which interpretation is based upon the canceled claim.

***Claim Rejections - 35 USC § 103***

7. Claims 30-35 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Capon et al. (U.S. Pat. No. 5,565,335).

'335 discloses immunoglobulin fusion proteins comprising CD4 and to the C-terminal Fc portion of an antibody, which Fc region consists of the hinge, CH2 and CH3 domains of the heavy chain of an IgG and which contains the intermolecular disulfide bond region of the hinge domain (col. 7, lines 50-64, and col. 26, line 44 to col. 28, line 14). '335 also discloses that CD4 fused to

the constant domain of an IgG heavy chain results in secretion of a CD4-IgG homodimer. '335 also teaches a CD4-IgG heterotetramer composed of two CD4-light chain fusion proteins and two CD4-heavy chain fusions (col. 6, line 61 to col. 7, line 11) and discloses that suitable fusion proteins can be obtained from IgG-1, -2, -3 or -4, as well as IgA, IgE, IgD or IgM (col. 7, lines 47-49). '335 further teaches that the CD4-IgG fusion protein can be conjugated to toxins such as deglycosylated ricin A chain or Diptheria toxin (col. 8, line 62 to col. 9, line 7). '335 discloses that CD4-IgG fusion proteins can be used in compositions to treat HIV (col. 1, lines 11-15) or can be labeled for use as a diagnostic reagent (col. 10, line 66 to col. 11, line 4). Although '335 does not exemplify a CD4-IgG2 fusion protein, as claimed in the instant application, it would have been obvious to one having ordinary skill in the art at the time the invention was made to follow the teachings and motivations of '335 to make any CD4-IgG homodimer, including the claimed CD4-IgG2 homodimers, heterotetramers, as well as conjugates thereof. The skilled artisan would have had a reasonable expectation of success that a CD4-IgG2 homodimer would be biologically active because the constant domains of IgG proteins are similar to one another and because '335 teaches that any IgG subtype can be used in the CD4-IgG fusion. Although Applicant states that the CD4-IgG2 homodimers would be less likely to increase infection of monocytes/macrophages by HIV than CD4-IgG1 when administered *in vivo*, the specification provides no *in vivo* or *in vitro* evidence that CD4-IgG2 has these properties. Thus, the change of IgG1 in the CD4-IgG fusion to IgG2 is considered *prima facie* obvious, since a minor change in the chemical

configuration of a molecule is considered to be *de minimus*, and is not deemed to impart any patentable differences, absent evidence to the contrary (*Ex parte Anderson* 30 USPQ2d, 1866).

***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Karen E. Brown at (703) 308-3667, fax number (703) 308-0294. The Examiner can normally be reached Mondays through Thursdays and alternate Fridays from 7:30 a.m. to 5:00 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Stephen Walsh, can be reached at (703) 308-2957.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist at (703) 308-0196.

KB

Karen E. Brown
7 November 1996

Stephen Walsh
STEPHEN WALSH
SUPERVISORY PATENT EXAMINER
GROUP 1800